AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings includes changes to Figs. 1(a), 1(b), 2(a), 2(b), 3-5, 6(a), 6(b), and 7. These sheets, which include Figs. 1(a), 1(b), 2(a), 2(b), 3-5, 6(a), 6(b), and 7, replace the original sheets including Figs. 1(a), 1(b), 2(a), 2(b), 3-5, 6(a), 6(b), and 7.

Attachment: Replacement Sheet(s)
Annotated Sheet Showing Changes

REMARKS

Reconsideration of this application is respectfully requested.

As requested, the specification and drawings have been amended so as to replace all references to color in favor of suitable black and white showings of the indicated features.

As suggested, references listed on pages 10 and 11 are attached together with the Form PTO-1449. The IDS fee for this stage of prosecution is also attached. Consideration and return of a fully initialed copy of the Form PTO-1449 is respectfully requested.

The objection to claim 4 regarding the need to explain the meaning of variables used in formulae is not understood. All of the variables used in the formulae are properly defined in claim 4 (e.g. in terms of x, y, z coordinates of Voronoi centers).

In response to the rejection of claim 1 under 35 U.S.C. § 112, second paragraph, the objectionable phrase "such as density" has been eliminated (in all similar occurrences throughout the claims).

Accordingly, all formality issues are now believed to have been resolved in the applicant's favor.

The Examiner is thanked for finding allowable subject matter in dependent claim 4. Since this claim has now been amended to self standing independent format, it is assumed that claim 4 is now in a fully allowed status.

Rejection of claims 1 and 6 under 35 U.S.C. § 103 as allegedly being made "obvious" based on Ledru in view of Shirriff and in further view of Sides is respectfully traversed.

Ledru teaches selection of Voronoi centers at a plurality of locations over a region of interest for generation of a three dimensional model. Ledru et al. uses existing Voronoi tessellations which are capable of generation of only polygonal structures. The claimed

invention however, relies on fractal based Voronoi tessellation using fractional and negative values of exponent p in L^p norm. Thus, complex irregular structures close to natural settings are generated thereby enabling computations of an expected gravity response thereof. Assigning physical property variation to the regions during generation of models is mandatory for any geophysical modeling. The method followed in the invention is neither taught nor guided towards in Ledru et al.

Shirriff et al. teaches generation of fractal images using existing Voronoi tessellation L^2 norm distance. In Shirriff, the number of Voronoi centers is increased continuously to achieve fractal images. This results in an increase in the number of coordinates and results in cumbersome calculations associated with the computation of each image. The claimed invention, however generates irregular fractal geological structures by changing only exponent 'p' as explained above in fractal based modified Voronoi tessellation. The number of Voronoi centers is not increased. The fractal approach is actually embedded in the tessellation due to modification of exponent 'p' in L^p norm.

Sides et al. teaches generation of structures using polygonal tessellation and Delaunay triangles. It does not teach the method of the claimed invention

Even if the three are read together arguendo (for which motivation is absent), such would not teach or suggest the method of the claimed invention.

The rejection of claim 2 under 35 U.S.C. § 103 is allegedly being made "obvious" based on Ledru/Shirriff/Sides in further view of Mishev is also respectfully traversed.

The fundamental deficiencies of the first, second and third references have already been noted above with respect to parent claim 1.

Mishev does not teach the added limitation of claim 2. In Mishev, p=2 in the L^p norm – this is well known as the least square approach and is commonly used in existing Voronoi tessellations. Mishev however does not teach or suggest generation of irregular geometry or irregular geometry or application of fractal or negative norm of distances to generate irregular geometrical models.

Rejection of claims 3 and 5 under 35 U.S.C. § 103 is allegedly being made "obvious" based on yet another four-way combination of references: Ledru/Shirriff/Sides in further view of Archibald is also respectfully traversed.

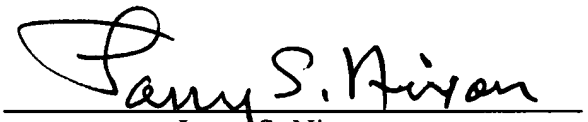
Again, fundamental deficiencies of the first, second and third references have already been noted above with respect to parent claim 1.

Archibald only teaches mapping of subtle changes in sedimentary sequences by multiscale edge analysis of potential field data. Multiscale analysis as taught by Archibald et al. relates to wavelet theory and can only assist in extraction of preliminary information from observed field data for visualization of an underlying object to be used in the inversion. It cannot be used to model complex geological structures lying beneath the Earth's surface.

Accordingly, this entire application is now believed to be in allowable condition and a formal notice to that effect is respectfully solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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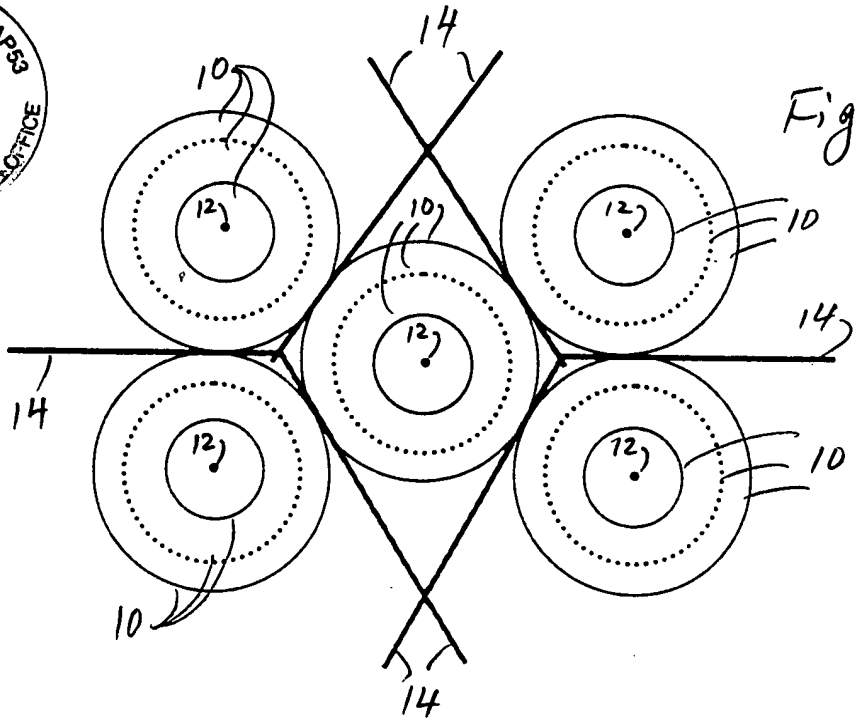

Fig. 1 (a)

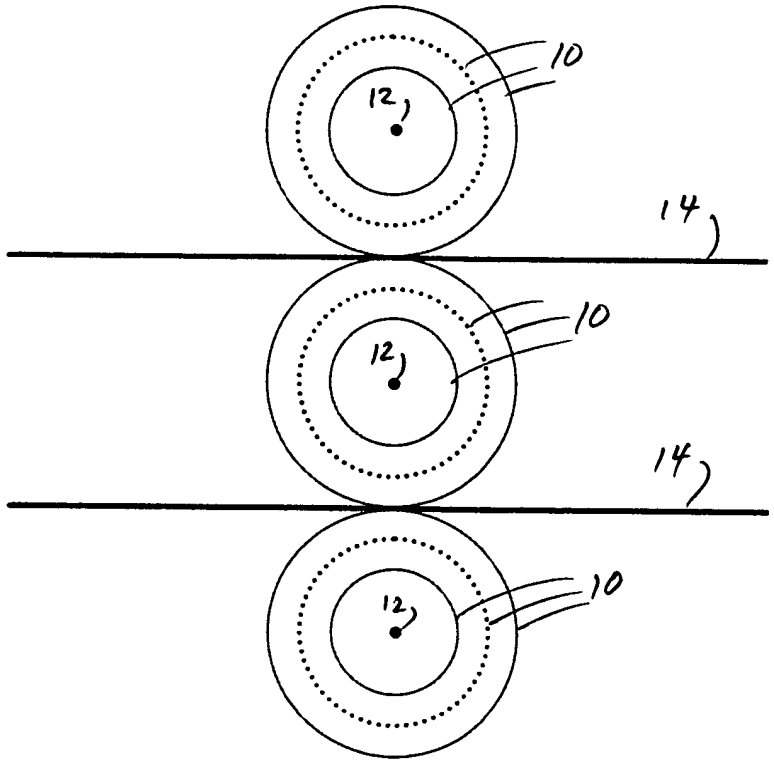

Fig. 1 (b)

Fig. 1

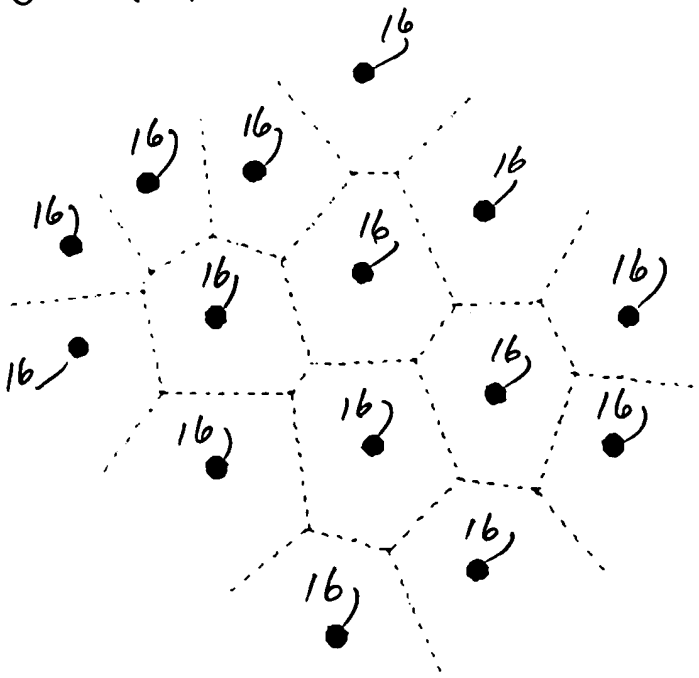

Fig. 2(a)

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Fig 2 (b)

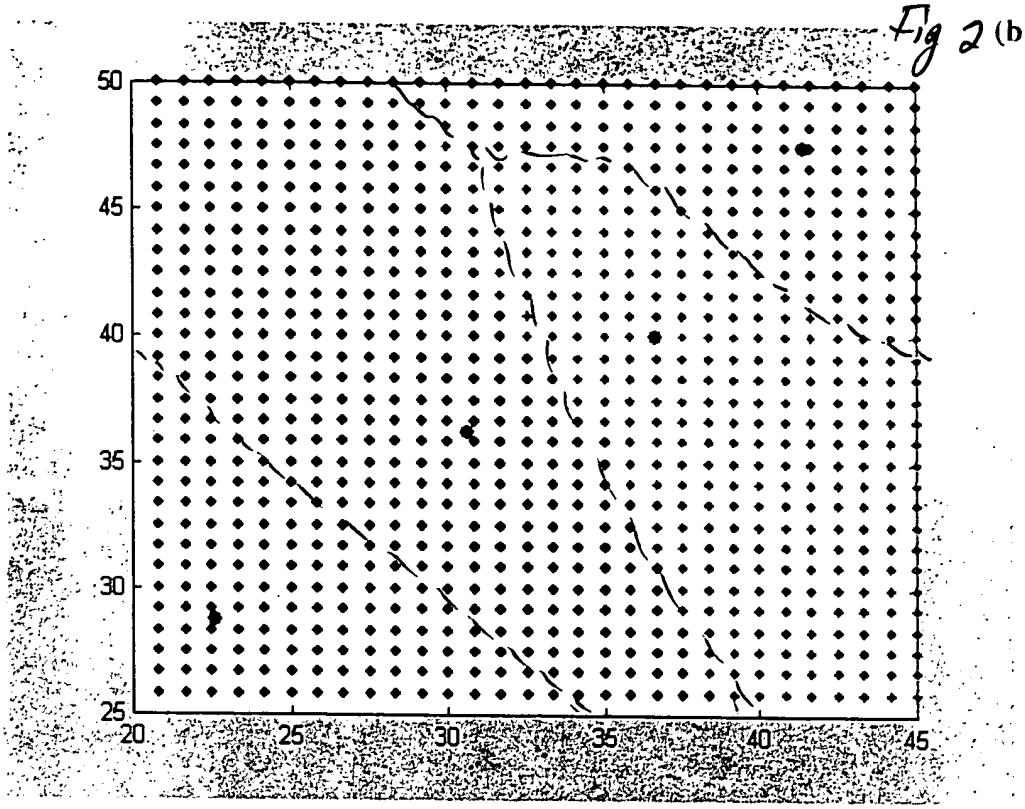

Fig. 2

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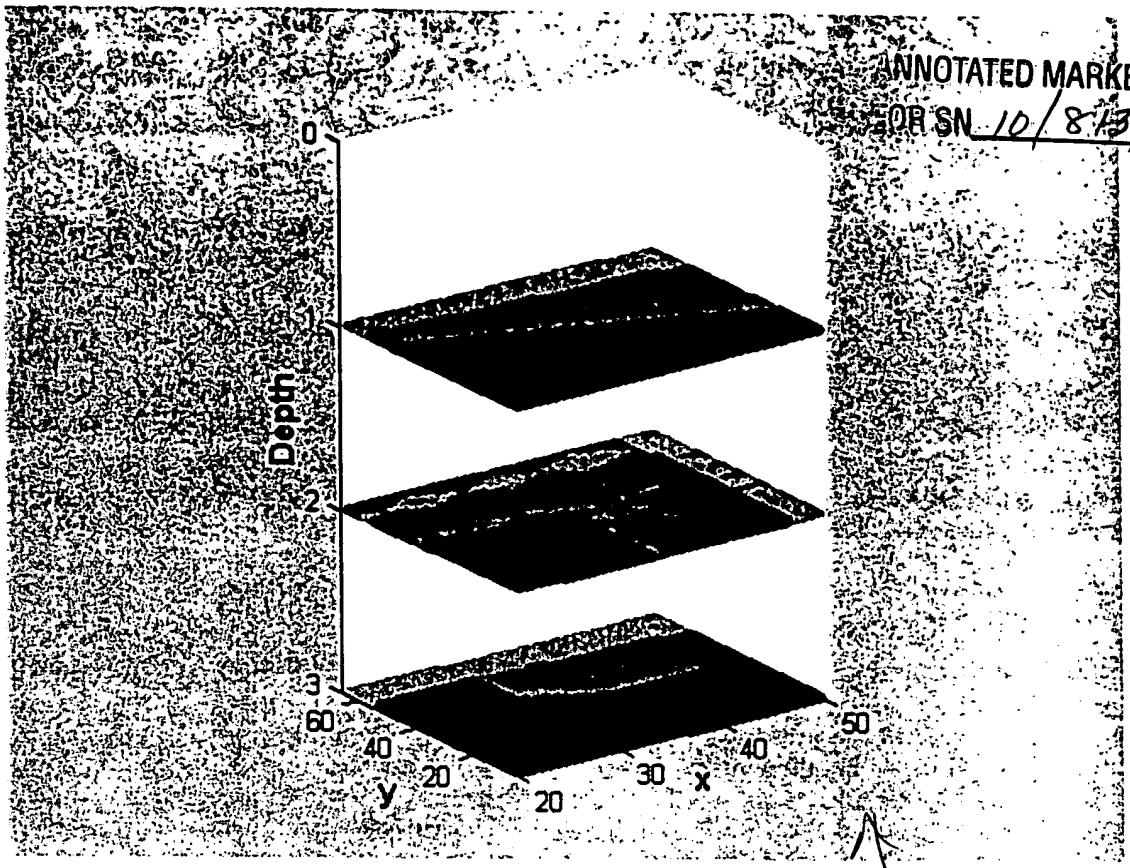

show different colored areas by different shading

Fig. 3

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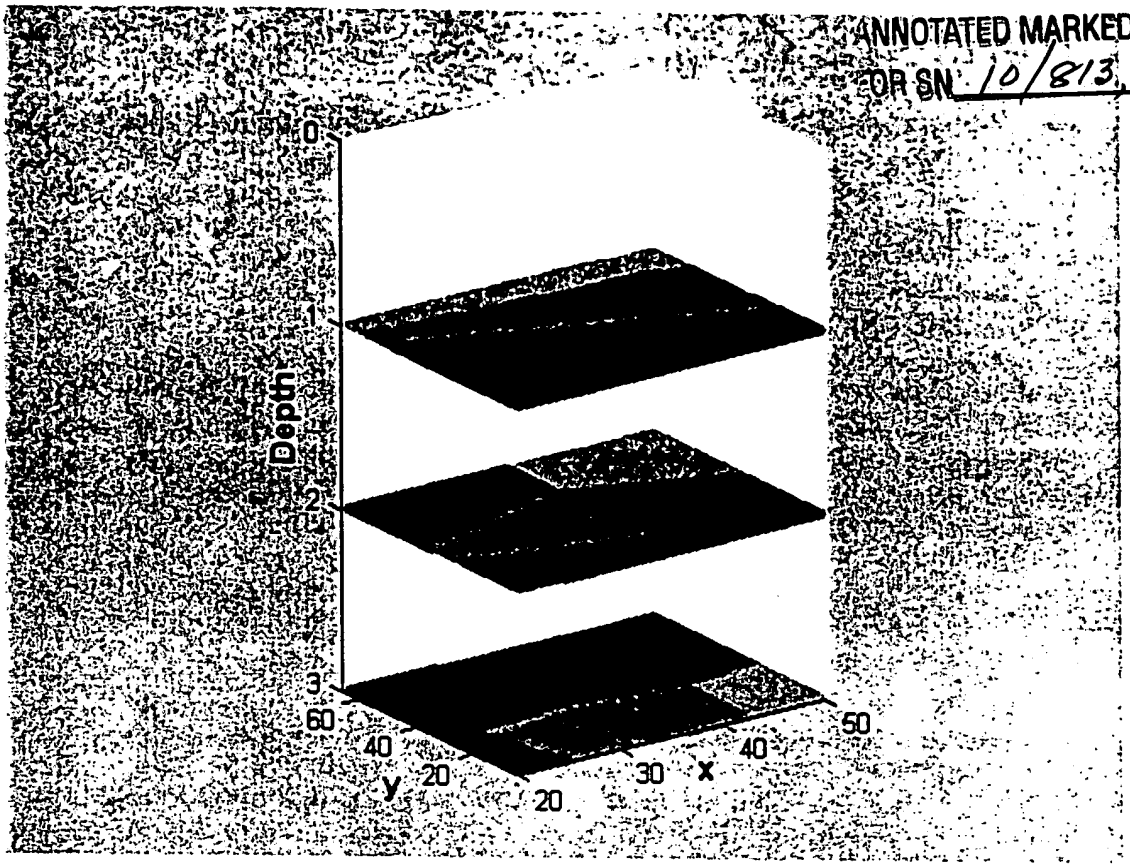

Fig. 4

show differently coloured areas by different shading

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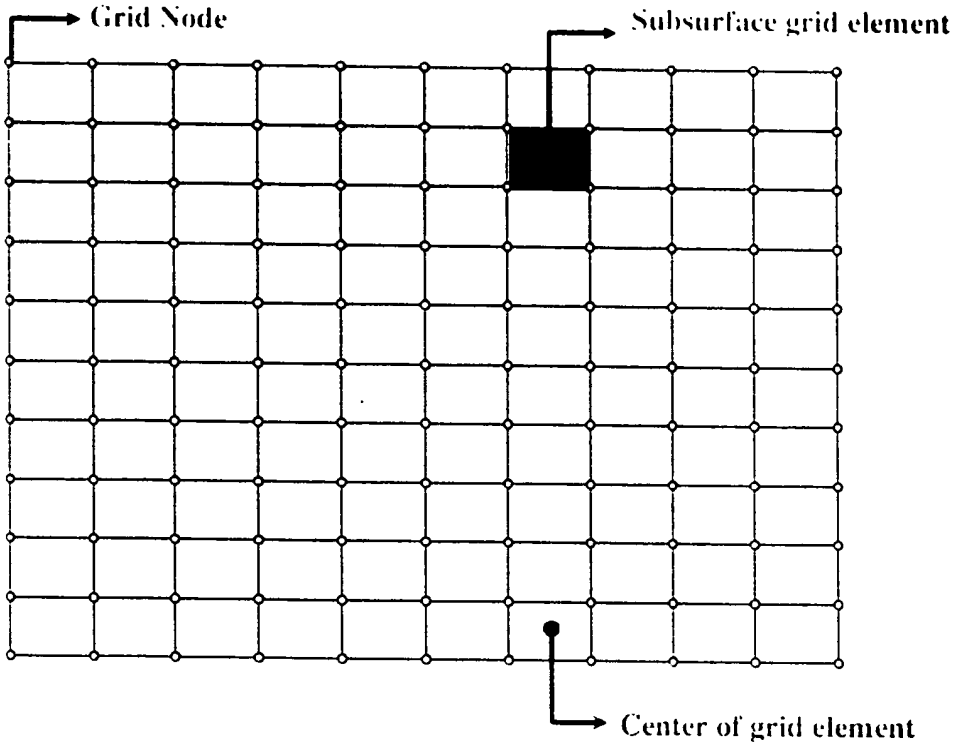

Fig. 5

12/11/2003

Fig. 6(a)

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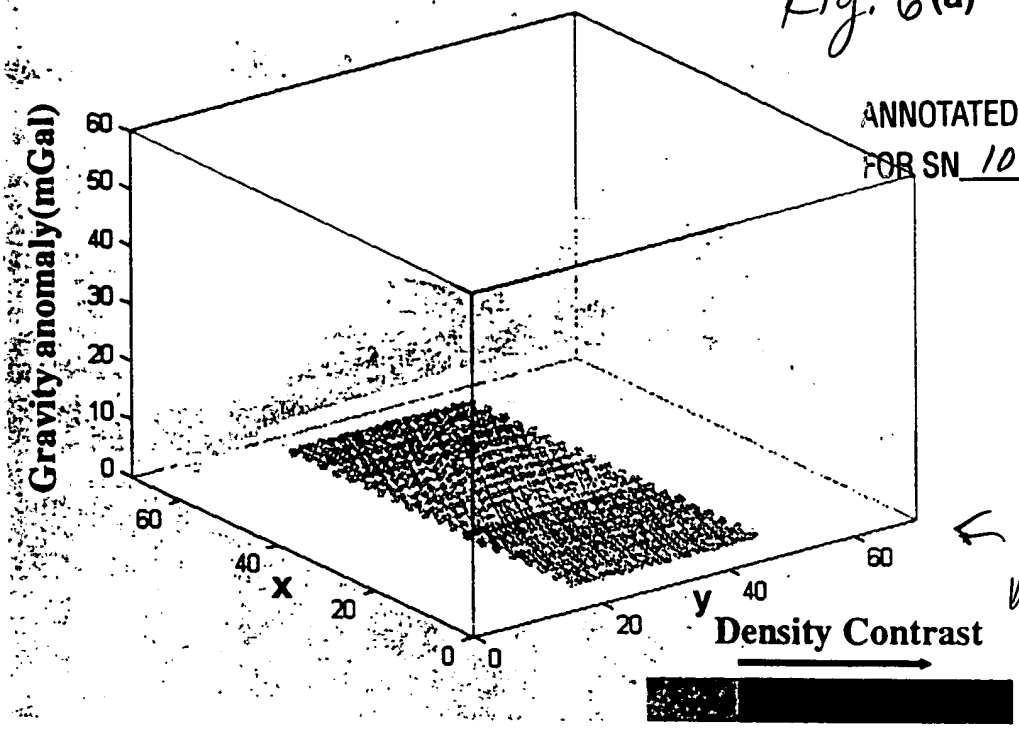

← show differently colored areas by different shading

Fig. 6(b)

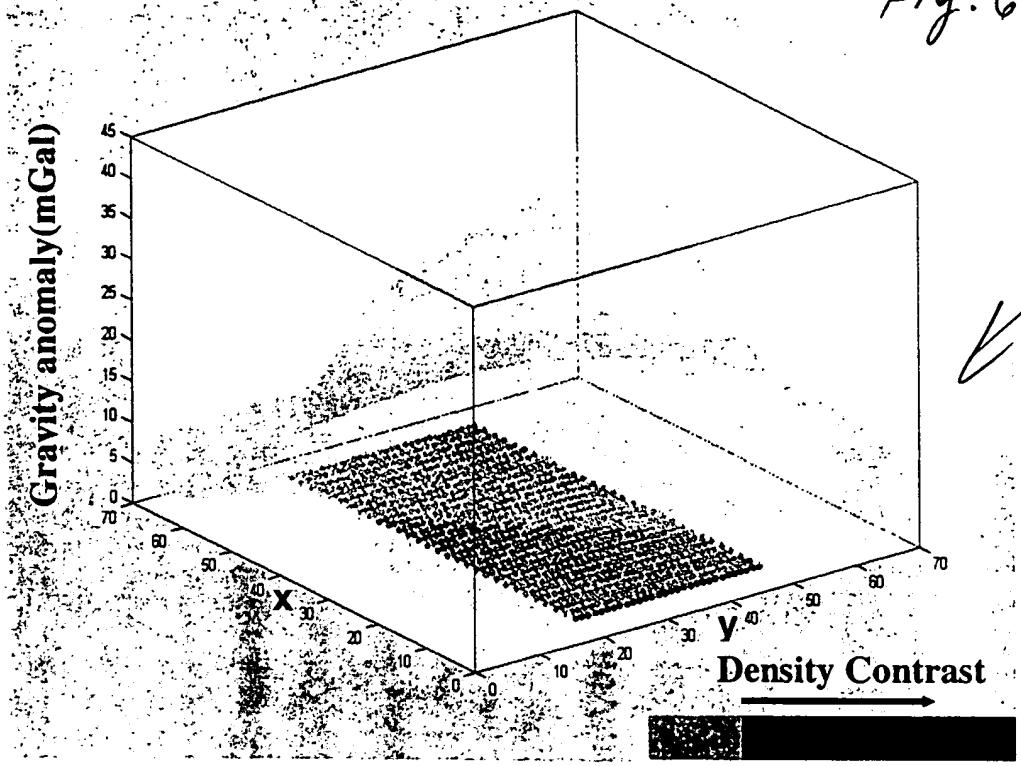

Fig. 6

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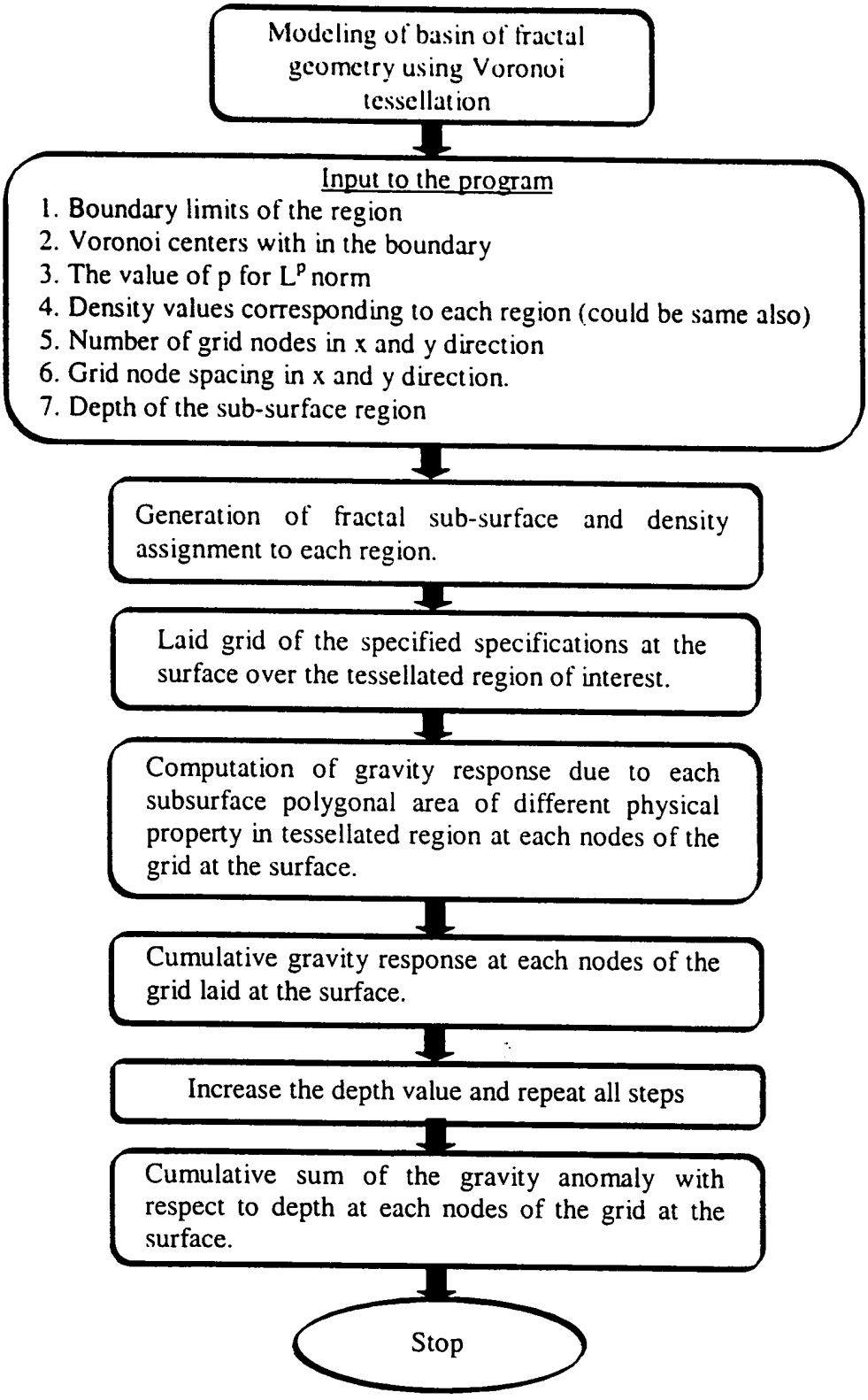

Fig. 7

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